

## **Glossary**

### **Anadromous**

Fish that spend most of their lives in salt water but migrate into freshwater tributaries to spawn (such as shad and sturgeon).

### **Anoxia**

A condition in which no oxygen is present. Much of the “anoxic zone” is anaerobic and contains no oxygen. In this condition toxic hydrogen sulfide gas is emitted in the decomposition process.

### **Anthropogenic**

Of human origin.

### **Bathymetry**

The physical characteristics—including the depth, contour and shape—of the bottom of a body of water.

### **Benthos**

A group of organisms, often invertebrates, that live in or on the bottom in aquatic habitats (such as clams that live in the sediments) and that are typically immotile or have limited mobility or range.

### **Biomass**

The quantity of living matter, expressed as a concentration or weight per unit area.

### **Chlorophyll *a***

A pigment contained in plants that converts light energy into food. Chlorophyll *a* also gives plants their green color and is used to indicate the amount of microscopic algae growing in a water body.

**Designated use**

An element of a water quality standard, expressed as a narrative statement, describing an appropriate intended human or aquatic life objective for a body of water. Designated uses for a water body may refer to recreation, shellfishing, water supply and aquatic life habitat.

**Dissolved oxygen**

Microscopic bubbles of oxygen that are mixed in the water and occur between water molecules. Dissolved oxygen is necessary for healthy lakes, rivers, and estuaries. Most aquatic plants and animals need oxygen to survive. Fish will drown in water when the dissolved oxygen levels become too low. The absence of dissolved oxygen in water is a sign of possible pollution.

**Epifaunal**

Plants, animals and bacteria that are attached to the hard bottom or substrate (for example, to rocks or debris); are capable of movement; or that live on the sediment surface.

**Epiphyte**

Algae that grow on the surfaces of plants or other objects. The epiphyte does not “eat” the plant on which it grows, but merely uses it for structural support or as a means to enter the canopy environment. By encrusting leaf surfaces, they reduce the light available to the plant leaves and lead to loss of underwater bay grasses.

**Estuarine species**

A permanent resident of an estuary. Also called a resident species.

**Estuary**

A semi-enclosed body of water, such as the Chesapeake Bay, that has a free connection with the open sea and within which seawater from the ocean is diluted measurably with freshwater derived from land drainage. Brackish estuarine waters are decreasingly salty

in the upstream direction, and vice versa. The ocean tides are projected upstream to the fall lines.

**Eutrophic**

A condition of an aquatic system containing high nutrient concentrations, which fuels algal growth. When the algae die off and decompose, the amount of dissolved oxygen in the water is reduced.

**Filter feeders**

Organisms that filter food from the environment using a straining mechanism, such as gills (e.g., barnacles, oysters and menhaden).

**Hypoxia**

A condition in which only very low levels of oxygen are present.

**Light attenuation**

The absorption, scattering or reflection of light by water, chlorophyll *a*, dissolved substances or particulate matter. Light attenuation reduces the amount of light available to underwater bay grasses.

**Mean Low Water**

The average of all the low water heights observed over the National Tidal Datum Epoch.

**Mesohaline**

Pertaining to moderately brackish water with low to middle range salinities (from 5 to 18 parts per thousand)

**Mesotrophic**

A condition of an aquatic system containing medium nutrient concentrations and, therefore, is between eutrophic (nutrient enriched) and oligotrophic (nutrient poor) conditions.

**Mg liter<sup>-1</sup>**

Concentration unit milligrams per liter.

**Nitrogen saturated**

A state in which the forest vegetation and soils have reached their capacity to retain additional nitrogen. This state leads to greater leakage of nitrogen to sub-surface or ground waters.

**Nutrients**

Compounds of nitrogen and phosphorus dissolved in water that are essential to plants and animals. Too much nitrogen and phosphorus act as pollutants and can lead to unwanted consequences—primarily algae blooms that cloud the water and rob it of oxygen critical to most forms of aquatic life. Sewage treatment plants, industries, vehicle exhaust, acid rain and runoff from agricultural, residential and urban areas are sources of nutrients that enter the Bay.

**Oligohaline**

Pertaining to moderately brackish water with low range salinities (from 0.5 to 5 parts per thousand).

**Percent-light-through-water**

The amount of light reaching just above the canopy of underwater bay grasses, expressed as a fraction of the light at the water surface.

**Phosphorus**

A key nutrient in the Bay's ecosystem, phosphorus occurs in dissolved organic and inorganic forms, often attached to particles of sediment. This nutrient is a vital component in the process of converting sunlight into usable energy forms for the production of food and fiber. It is also essential to cellular growth and reproduction for organisms such as phytoplankton and bacteria. Phosphates, the inorganic form, are

preferred, but organisms will use other forms of phosphorus when phosphates are unavailable.

**Phytoplankton**

Microscopic plants, such as algae, that are capable of making food via photosynthesis. They float and cannot move independent of water currents.

**Polyhaline**

Pertaining to waters with a higher range of salinities (18 to 30 parts per thousand).

**Ppt**

Parts per thousand (used as a measurement of salinity).

**Pycnocline**

The portion of the water column where density changes rapidly because of salinity and temperature. In an estuary the pycnocline is the zone separating deep, more saline waters from the less saline, well-mixed surface layer waters.

**Salinity**

A measure of the salt concentration of water. Higher salinity means more dissolved salts. Usually measured in parts per thousand (ppt).

**Salinity regimes**

A portion of an estuary distinguished by the amount of tidal influence and salinity of the water. The major salinity regimes are, from least saline to most saline:

- *Tidal fresh* – Describes waters with salinity between 0 and 0.5 parts per thousand (ppt). These areas are at the extreme reach of tidal influence.
- *Oligohaline* – Describes waters with salinity between 0.5 and 5 ppt. These areas are typically in the upper portion of an estuary.

- *Mesohaline* – Describes waters with salinity between 5 and 18 ppt. These areas are typically in the middle portion of an estuary.
- *Polyhaline* – Describes waters with salinity between 18 and 30 ppt. These areas are typically in the lower portion of an estuary, where the ocean and estuary meet.

**Saturation**

The state of a compound or solution that is fully saturated. For example, a condition in which water at a specific temperature contains all the dissolved oxygen it can hold. Dissolved oxygen percent saturation is an important measurement of water quality. Cold water can hold more dissolved oxygen than warm water. Also, high levels of bacteria from sewage pollution or large amounts of decomposing plants can cause the percent saturation to decrease. This can cause large fluctuations in dissolved oxygen levels throughout the day, which can affect the ability of plants and animals to thrive.

**Secchi depth**

A measure of cloudiness or turbidity of surface water determined by the depth at which the “Secchi disk”, a flat black and white disk, cannot be seen any more. It is the greatest depth to which light can penetrate underwater.

**Seiching**

Formation of standing waves in a water body due to wave formation and subsequent reflections from the ends. These waves may be incited by earthquake motions (similar to the motions caused by shaking a glass of water), impulsive winds over the surface, or due to wave motions entering the basin. In the Chesapeake Bay, sustained winds force bottom water onto the shallows through this physical process.

**Stratification**

The formation, accumulation or deposition of materials in layers, such as layers of fresh water overlying higher salinity water (salt water) in estuaries.

**Submerged Aquatic Vegetation (SAV)**

Rooted vegetation that grows under water in shallow zones where light penetrates. Also known as ‘underwater bay grasses’.

**Subpycnocline**

Bottom mixed layer waters located below the pycnocline layer (see definition for ‘pycnocline’).

**Surficial**

Of, relating to, or occurring on or near the surface of the sediment bottom.

**Thermocline**

A specific depth where the water temperature changes dramatically. Warmer surface water is separated from the cooler deep water. This temperature gradient results in the formation of a density barrier.

**Total Suspended Solids (TSS)**

Solids in water that can be trapped by a filter (usually with a pore size greater than 0.45 micrometer). TSS can include a wide variety of material, such as silt, decaying plant and animal matter, industrial wastes and sewage. High concentrations of suspended solids can cause many problems for Chesapeake Bay health and aquatic life. For example, high TSS can block light from reaching underwater bay grasses, increase surface water temperature, because the suspended particles absorb heat from sunlight, and affect the ability of fish to see and catch food.

**Trophic level**

Layer in the food chain in which one group of organisms serves as the source of nutrition of another group of animals.

**Turbidity**

The decreased clarity in a body of water due to the suspension of silt or sedimentary material.

**Underwater bay grass**

Submerged vascular plants often referenced in the scientific literature as submerged aquatic vegetation or SAV, not to be confused with emergent wetland plants.

**Water clarity**

Measurement of how far you can see through the water. The greater the water clarity, the further you can see through the water.

**Water column**

The open-water environment, as distinct from the bed or shore, which may be inhabited by swimming marine, estuarine or freshwater organisms.

**Water-column light requirement**

The amount of light just above the leaf surface (estimated as the fraction of the light at the water surface) that is necessary for the survival and growth of underwater bay grasses.

**Water quality criteria**

Numeric or narrative description of a water quality parameter that represent a quality of water that supports a particular designated use. Adopted by states, along with designated uses, into water quality standards.

**Water quality standards**

A provision of State or Federal law consisting of a designated use or uses for a water body and a narrative or quantifiable criterion protective of the use(s) describing the desired conditions of the subject waters or water body to which they apply.



**Watershed**

A region bounded at the periphery by physical barriers that cause water to part and ultimately drain to a particular body of water.

**Young-of-the-year**

All of the fish of a species younger than one year of age. Usually scientists assign an arbitrary "birth date" to all fish of a species hatched over a two or three month period in one year. The fish are then assigned to Age 1 status on that birth date. By convention, this is usually January 1.

**Zooplankton**

A community of floating, often microscopic animals that inhabit aquatic environments. Unlike phytoplankton, zooplankton cannot produce their own food, and so are consumers.